REMARKS

Favorable reconsideration of this application, in light of the following remarks, is respectfully requested.

Claims 1-26 are pending in this application. Claims 1, 12, 19, and 22 are the independent claims.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-3, 5, 8-9, 12, 14, and 19-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,556,695 ("Packer") in view of US Patent Publication No. 2002/0176608 ("Rose"), and further in view of "A System for Multimodality Image Fusion ("Hemler"), U.S. Patent Publication No. 2001/0036303 ("Maurincomme") and U.S. Patent Publication No. 2007/0055142 ("Webler"). Applicants respectfully traverse this rejection for the reasons detailed below.

Principles of Law

In order to set forth a prima facie case of obviousness under 35 U.S.C. § 103(a), the Examiner must make the factual determinations set forth in Graham v. John Deere Co., 282 U.S. 1, 17 (1966), including identifying differences between the claimed invention and the prior art. Each limitation of a claim must be given weight in this determination in order to determine whether the "subject matter as a whole would have been obvious." 35 U.S.C. § 103(a). In combining references and accounting for differences between a claim and the applied art, the Examiner must provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR Int'l Co. v. Teleflex, Inc., 127 S.Ct. 1727, 1741 (2007). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in

applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

PACKER FAILS TO DISCLOSE OR FAIRLY SUGGEST ALL CLAIMED LIMITATIONS

It is alleged in the Office Action that FIG. 1, col. 2, lines 14-60, col. 11, lines 33-48 and col. 12, lines 28-61 of Packer teach "visualizing electroanatomical 3D mapping data, provided during the performance of the catheter application, of an area of the heart to be treated," as recited in independent claim 1.

However, the Appellants submit that Packer fails to disclose or even suggest any "electroanatomical 3D mapping data," as required by claim 1. Fig. 1 of Packer merely illustrates a MRI apparatus. Col. 3, lines 51-67 of Packer relate to the imaging modality for producing the high resolution model (CT, MRI, ultrasound). Col. 2, lines 14 -60 of Packer disclose <u>acquiring image data</u> of the subject anatomy and reconstructing an image which is a high resolution model of the subject anatomy; performing a medical procedure in which the subject anatomy is imaged in real-time by <u>acquiring low resolution images</u> at a high frame rate; <u>registering the high resolution model of the subject anatomy with each acquired low resolution image</u>; and displaying images of the registered high resolution model of the anatomy. As is understood, the cited sections of Packer relate to a process of <u>rendering 3D surfaces on a 2D display</u> and this all mapping data is <u>two dimensional</u>. Accordingly, Packer fails to disclose or even suggest any "3D mapping data," as recited in independent claim 1.

It is further alleged in the Office Action at Page 4 that col. 5, line 63- Col. 6, line 48 of Packer disclose "extracting a **3D surface profile** of objects in the area to be treated from the 3D image data by segmentation," as recited in independent claim 1. (Emphasis Added)

As discussed above, the cited sections of Packer are directed to the process of rendering acquired 3D surfaces on a 2D display. Further, these sections of Packer are directed to processing the acquired 3D image data into a 4D model from which 3D heart wall surfaces can be rendered. This process of rendering acquired 3D surfaces involves segmenting of the heart walls and tiling of the surfaces of the segmented heart wall images. However, no "3D surface profile" is ever extracted. Packer fails to teach or even suggest "extracting a 3D surface profile," as recited in independent claim 1.

The Examiner admits that Packer does not explicitly teach "3D surface profile," as required by claim 1, and relies on the teachings of Rose to overcome the noted deficiencies of Packer.

Particularly, the Examiner alleges that paragraphs [0005-0007] of Rose teach "extracting a 3D surface profile," as recited in independent claim 1. Appellants disagree.

THE COMBINATION OF PACKER AND ROSE IS IMPROPER

Rose is directed to a non-contact surface profiling method using light. Rose focuses primarily upon road surfaces. However, as per Rose, the discussion applies equally to any surface intended for vehicular traffic. According to Rose, these surfaces include, but are not limited to, highways, roads, ramps, parking, and service areas for ground vehicles (trucks, cars, busses, etc.), runways, taxiways, parking aprons, and hangar floors for aircraft, and tracks and roadbeds for railroads. The terms "road" and "road surface," as used herein, refer specifically to "a road" and "a surface of a road," respectively, and refer generally to "a way or course for ground, air, or rail vehicles" and "a surface of a way or course," respectively. The sections of Rose cited by the Examiner are reproduced below.

[0005] In the industry, <u>road condition is measured by profiling</u>. Profiling is the obtaining of a profile or series of profiles of the road surface. <u>A profile is substantially a cross-sectional view of the surface of the road</u>. <u>A profile depicts the contours of the road, thereby demonstrating the form, wear, and irregularities of the road surface</u>.

[0006] <u>A transverse profile is a cross-sectional view of the road surface</u> or a portion thereof taken substantially perpendicular to the direction of travel. A transverse profile may be used to depict rutting, potholes, scaling, chipping, and edge damage of the road surface over time.

[0007] <u>A longitudinal profile is a cross-sectional view taken substantially in the direction of travel</u>. A longitudinal profile may be used to depict the grade, waviness, and roughness of the road surface. Longitudinal profiles may be used to <u>monitor the wear of the road surface over time to facilitate maintenance planning</u>.

<div align="right">(Emphasis Added)</div>

Absolutely nowhere in Rose is it mentioned that the techniques disclosed therein can be used in the field of medical imaging. Thus, nowhere in Rose is it disclosed that the device disclosed therein can be modified to image living organisms, or, rather, "extract 3D surface profiles of objects in an area to be treated," as claimed. Accordingly, although Rose is directed to an imaging method, Rose is not directed to any medical imaging method that "[extracts] 3D surface profiles of objects in an area to be treated," as claimed. <u>On the other hand,</u> Packer <u>is directed to a completely different technological field of medical imaging. Applicants submit that it would not be obvious for one of ordinary skill in the art dealing with electroanatomical mapping or endocardial ablation to rely on</u> Rose <u>that deals with two-dimensional surface profiling of roads</u>.

Appellants submit that the combination of Packer and Rose is not obvious and is based on improper hindsight reconstruction gleaned from viewing Applicants' Specification and reading the claims, and not on a reason with some rational underpinnings for combining Packer and Rose. Rose does not appear to be interested in the 3D surface profiling of organs of living organisms. The Examiner

has provided no evidence or reasoning that Rose appears to be interested in producing 3D surface profiles of organs of living organisms.

Accordingly, the combination of Packer and Rose is not an obvious combination of prior art elements or a simple substitution of one known element for another, leading to predictable results, or any other indicator of potential obviousness. Rather the extensive amount of modification needed is suggested nowhere in the cited references or by the Examiner, and is born from use of impermissible hindsight reconstruction in view of the Appellants' Specification and reading of the claims. (See, for example, *Ex parte* Kobayashi, Appeal 2009-000884, Application 10/031,282).

Applicants submit that for all the above reasons, the alleged combination of Packer and Rose is improper and, even if combined (which is not admitted), the combination fails to render the limitation of independent claim 1, and the somewhat similar features recited in independent claims 12, 19 and 22 obvious to one of ordinary skills in the art.

Rose Fails To Remedy The Deficiencies Of Packer

As discussed above, Rose is directed to a non-contact surface profiling method using light. Rose fails to teach, suggest or even point out any "**visualizing electroanatomical 3D mapping data**, provided during the performance of the catheter application, of an area of the heart to be treated; **recording 3D image data of the area to be treated with a method of tomographical 3D imaging** before the catheter application is carried out; [and] **visualizing the electroanatomical 3D mapping data and 3D image data representing at least the 3D surface profile**," as recited in independent claim 1, and the somewhat similar features recited in independent claims 12, 19 and 22. (Emphases Added)

Rose is directed to primarily road surfaces and to any surface intended for vehicular traffic. Rose does not utilize any methods of tomographical 3D imaging. The system 20 in FIG. 1 of Rose is <u>a vehicular-mounted system</u>. The components of system 20 are mounted upon and/or inside of a vehicle 40. The type of vehicle to be used for vehicle 40 is not relevant to the present invention, and a wide assortment of vehicles, from hand carts, though golf carts, cars, trucks, railroad cars, and even aircraft may be used. Further, the device and method of Rose incorporates projecting a <u>two-dimensional pattern</u> of alternating relatively lighter and relatively darker regions upon a surface that is profiled. Rose fails to teach or fairly suggest any "**electroanatomical 3D mapping data**," "**3D image data**" and/or "**3D surface profile**," as recited in independent claim 1.

Still further, Rose does not even appear to be interested in performing any of the above claimed features on any of the vehicular surfaces that the Rose device and method profiles. Accordingly, Rose fails to remedy the above discussed deficiencies of Packer and a combination of the teachings of Packer and Rose (of combinable, which is not admitted) would still not render the limitations of claims 1, 19 and 22 obvious to one of ordinary skill in the art.

MAURINCOMME FAILS TO REMEDY THE DEFICIENCIES OF PACKER AND ROSE

In rejecting claim 1, the Examiner admits that the proposed combination of Packer and Rose fails to teach or fairly suggest "the visualized electroanatomical 3D mapping data and 3D image data representing at least the 3D surface profile being registered, with correct position and dimension, by automatically correlating the electroanatomical 3D mapping data and 3D image data representing the 3D surface profile by surface matching," as recited in independent claim 1. The Examiner relies on Maurincomme to overcome the noted deficiencies of Packer and Rose.

However, Applicants submit that the proposed combination of Packer, Rose and Maurincomme would only teach modifying Packer such that registration of the high resolution model data and low resolution image data is performed by automatic registration. The proposed combination fails to teach or even suggest automatic registration of electroanatomical 3D mapping data and 3D image data representing the 3D surface profile.

WEBLER FAILS TO REMEDY THE DEFICIENCIES OF PACKER, ROSE AND MAURINCOMME

In rejecting claim 1, the Examiner admits that the proposed combination of Packer, Rose and Maurincomme fails to teach or fairly suggest "electroanatomical 3D mapping data," as recited in independent claim 1. The Examiner relies on Webler to overcome the noted deficiencies of Packer, Rose and Maurincomme.

However, nothing in paragraphs [0014] and [0147] of Webler teaches or fairly suggest "electroanatomical 3D mapping data," as recited in independent claim 1. The proposed combination of Packer, Rose, Maurincomme and Webler fails to render "electroanatomical 3D mapping data," as recited in independent claim 1, obvious.

Additionally, Hemler fails to overcome the noted deficiencies of Packer, Rose, Maurincomme and Webler. For at least all the above reasons, Applicants respectfully submit that the proposed combination of Packer, Rose, Hemler, Maurincomme and Webler fails to render each and every limitation of claim 1 and the somewhat similar features recited in independent claims 12, 19 and 22 obvious to one of ordinary skill in the art. Claims 2-3, 5, 8-9, 14, 20, 21, 23, and 24, dependent on one of independent claims 1, 12, 19, and 22, are patentable for the reasons stated above with respect to claims 1, 12, 19, and 22 as well as for their own merits.

Applicants, therefore, respectfully request that the rejection to claims 1-3, 5, 8-9, 12, 14, and 19-24 under 35 U.S.C. § 103(a) be withdrawn.

ARGUMENTS AGAINST THE COMBINATION OF PACKER, ROSE, HEMLER, MAURINCOMME AND WEBLER

Applicants submit that one skilled in the art who studies Packer and attempts to combine Packer with the other four cited references would not arrive at the subject matter of Applicants' claims 1, 12, 19 and 22, and request the Examiner review the following materials regarding the combination of the five different references.

Initially, Applicants note that MPEP § 2143 specifically states the following:

To reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention **"as a whole"** would have been obvious at that time to that person. (Emphasis Added)

The "as a whole" prevents evaluation of the invention on a part-by-part basis. Without this important requirement, an obviousness assessment might break an invention into its component parts, then find a prior art reference corresponding to each component. This line of reasoning would import hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components. See Ruiz v. A.B. Chance., Co., 357 F.3d 1270, 1275 (Fed. Cir. 2004); 69 USPQ2d 1686, 2691 (Fed. Cir. 2004).

While the combination of five different references to reject the independent claims is not *per se* impermissible, Applicants note the number of references required would seem to indicate that the rejection is based on decomposing the claim and using improper hindsight analysis or ex post analysis.

Applicants respectfully submit that by using a combination of five different references the Examiner is over-estimating the capabilities of a person of *ordinary skill* in the art. Applicants submit that absent impermissible hindsight analysis, one skilled in the art at the time the invention was made could not and would not combine the teachings of the five different references of Packer, Rose, Hemler, Maurincomme and Webler in the precise manner required to render obvious all of the features of independent claims 1, 12, 19 and 22.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 4, 13, 18, and 25-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer in view of Rose, and further in view of Hemler, Maurincomme, Webler, and DE 19953308-A1 ("Williams"). Applicants respectfully traverse this rejection for the reasons detailed below.

Claims 4, 13, 18, and 25-26 are dependent on one of claims 1, 12, 19 and 22, and claims 1, 12, 19 and 22 are patentable over Packer, Rose, Hemler, Maurincomme and Webler for the reasons given above. Further, Williams fails to overcome the noted deficiencies of Packer, Rose, Hemler, Maurincomme and Webler. Therefore, the proposed combination of Packer, Rose, Hemler, Maurincomme, Webler and Williams fails to render the limitations of claims 4, 13, 18, and 25-26 obvious to one of ordinary skill in the art.

Applicants, therefore, respectfully request that the rejection to claims 4, 13, 18, and 25-26 under 35 U.S.C. § 103(a) be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 10-11 and 15-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer in view of Rose, and further in view of Hemler, Maurincomme, Webler, and U.S. Patent Publication No. 2003/0018251

("Solomon"). Applicants respectfully traverse this rejection for the reasons detailed below.

Claims 10-11 and 15-17 are dependent on one of claims 1 and 12, and claims 1 and 12 are patentable over Packer, Rose, Hemler, Maurincomme and Webler for the reasons given above. Further, Solomon fails to overcome the noted deficiencies of Packer, Rose, Hemler, Maurincomme and Webler. Therefore, the proposed combination of Packer, Rose, Hemler, Maurincomme, Webler and Solomon fails to render the limitations of claims 10-11 and 15-17 obvious to one of ordinary skill in the art.

Applicants, therefore, respectfully request that the rejection to claims 10-11 and 15-17 under 35 U.S.C. § 103(a) be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 103

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer in view of Rose, and further in view of Hemler, Maurincomme, Webler, and U.S. Patent Publication No. 2002/0087329 ("Massaro"). Applicants respectfully traverse this rejection for the reasons detailed below.

Claim 6 is dependent on claim 1, and claim 1 is patentable over Packer, Rose, Hemler, Maurincomme and Webler for the reasons given above. Further, Massaro fails to overcome the noted deficiencies of Packer, Rose, Hemler, Maurincomme and Webler. Therefore, the proposed combination of Packer, Rose, Hemler, Maurincomme, Webler and Massaro fails to render the limitations of claim 6 obvious to one of ordinary skill in the art.

Applicants, therefore, respectfully request that the rejection to claim 6 under 35 U.S.C. § 103(a) be withdrawn.

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REJECTIONS UNDER 35 U.S.C. § 103

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Packer in view of Rose, and further in view of Hemler, Maurincomme, Webler, and U.S. Patent No. 6,572,476 ("Shoji") and U.S. Patent Publication No. 2004/0233217 ("Chiu"). Applicants respectfully traverse this rejection for the reasons detailed below.

Claim 6 is dependent on claim 1, and claim 1 is patentable over Packer, Rose, Hemler, Maurincomme and Webler for the reasons given above. Further, Shoji and Chiu fails to overcome the noted deficiencies of Packer, Rose, Hemler, Maurincomme and Webler. Therefore, the proposed combination of Packer, Rose, Hemler, Maurincomme, Webler, Shoji and Chiu fails to render the limitations of claim 7 obvious to one of ordinary skill in the art.

Applicants, therefore, respectfully request that the rejection to claim 7 under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending objections and rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.
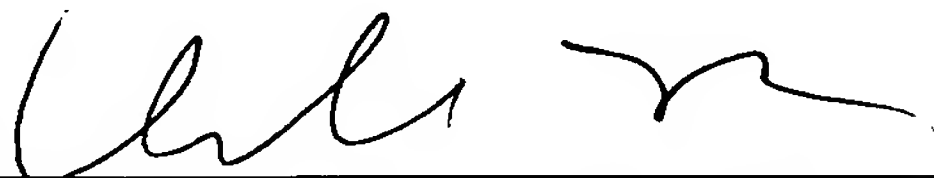
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By   _____

Donald J. Daley, Reg. No. 34,313
P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

DJD/AZP:jrm

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